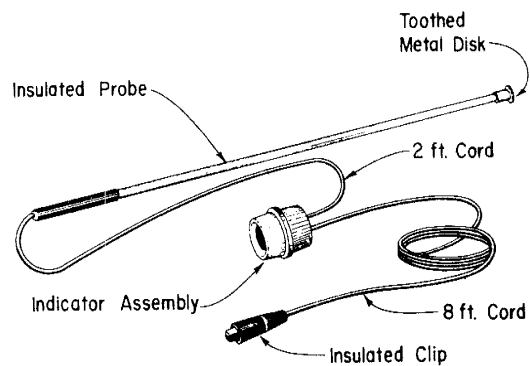


**OBSERVATIONS AND TESTS TO BE
MADE BEFORE CLIMBING OR
WORKING AT JOINT USE POLES**

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with a toothed metal disk on one end for making contact with the conductor, conduit or street light fixture to be tested. The probe is designed to limit the amount of current which can pass through the device. The probe, indicator assembly and an insulated clip are connected by insulated cord as illustrated.



B VOLTAGE TESTER

Fig. 1

1. GENERAL

1.01 This section covers observations and tests to be made before climbing or working at joint use poles to protect workmen against electrical shock from vertical power ground wires, metallic power conduit, or street light fixtures that may be energized. It has been reissued to cover modification of the B Voltage Tester Bag, specify recording the dates when the B Voltage Tester is tested, and add a requirement for temporary bonding of metal power conduit.

1.02 These instructions supplement those given in the sections on "Safeguards To Be Taken Before Climbing Poles."

2. DESCRIPTION OF B VOLTAGE TESTER AND VOLTAGE PLUG

2.01 The B Voltage Tester is designed to detect the presence of voltages from 60 volts to 7600 volts. It consists of an indicator assembly which contains a small neon glow unit and reflector, and a plastic insulated probe equipped

2.02 At 60 to 70 volts the indicator of the B Voltage Tester glows dimly. Higher voltages will produce a brighter glow. Because the higher voltages can damage the tester if left connected (7200 volts will burn it out in approximately one minute) it should be touched to the facility being tested **ONLY LONG ENOUGH TO DETERMINE WHETHER OR NOT THE INDICATOR GLOWS.**

2.03 A voltage plug, to be made up locally as illustrated, is designed to provide a safe and convenient means for checking the operation of the B Voltage Tester. When plugged into any standard 110- to 120-volt convenience outlet, it provides a source of voltage in series with a current limiting resistor. As illustrated, the resistor is connected to only one prong of the plug and this prong must be plugged into the "hot" side of the outlet. Normally the "hot" side may be identified as being the smaller of the two parallel slots in the outlet. (See Part 6 for use.)

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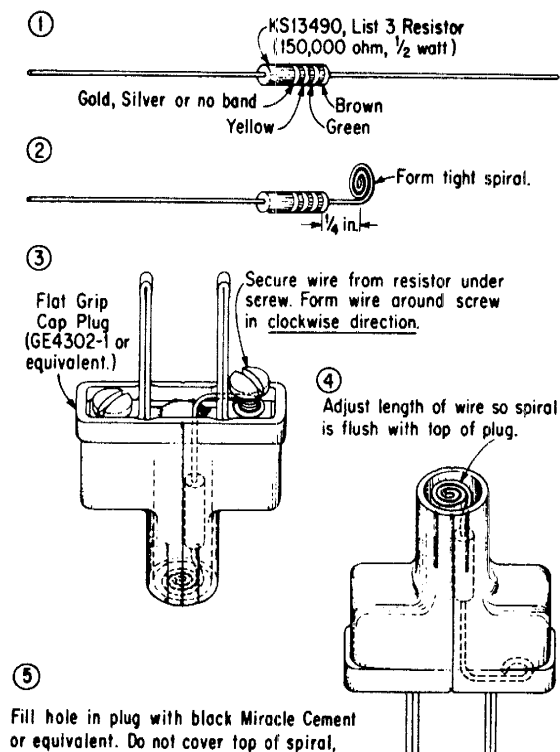


Fig. 2

3. OBSERVATIONS TO BE MADE BEFORE CLIMBING

→ **3.01** Examine the pole for potential hazards such as a vertical power ground wire, vertical metallic power conduit, or a street light fixture. Also observe the pole for such hazards as improper clearances from power conductors or equipment, dangling power wires, etc. If none of these is present, the pole may be climbed in accordance with safe climbing practices.

3.02 If a vertical power ground wire is present, make a voltage test in accordance with Part 4 before climbing or working at the pole unless it meets one of the following conditions:

- (a) The ground wire is bonded to a telephone cable strand, or
- (b) The ground wire is covered with wood molding, or equivalent, up through telephone space, or
- (c) The ground wire is of the insulated type and the insulation is in good condition.

3.03 If vertical metallic power conduit is present, make a voltage test in accordance with Part 4 before climbing or working at the

pole unless it can be clearly seen that the conduit is bonded to the telephone cable strand.

3.04 If a street light fixture is present, make a voltage test in accordance with Part 5, → only if the pole also carries multiple line wire, telephone cable (including isolated cable), or a bare vertical power ground wire.

Γ **3.05** Poles carrying street light fixtures may be worked on without making a voltage test
 ↳ under any of the following conditions:

- (a) The fixture is located in power space, or
- (b) The fixture is located ABOVE telephone attachments and it can be clearly seen that it is bonded to the telephone cable strand, or
- (c) The fixture is located BELOW telephone cable and it can be clearly seen that it is bonded to the telephone cable strand. However, in this case **INSULATING GLOVES SHALL BE WORN** in climbing the pole unless the wiring through and below telephone space is either 40 inches out from the pole surface or is otherwise made inaccessible.

→ **3.06** If a street light fixture is present in the telephone space on a pole not carrying a telephone cable or a bare vertical power ground wire, **WEAR INSULATING GLOVES AND AVOID CONTACT WITH IT OR ITS WIRING**, → even though a voltage test has been made, since it is not possible to place a temporary bond to an effective ground.

4. VOLTAGE TESTS – VERTICAL POWER GROUND WIRES OR METALLIC POWER CONDUIT

Γ **4.01** When a voltage test is required by Paragraph 3.02 or 3.03, proceed as follows
 ↳ before climbing or working on the pole.

- (a) Attach the insulated clip of the voltage tester to one of the following:
 - (1) A guy rod or telephone anchor guy. (Do not attach to an anchor rod that carries an uninsulated guy which is bonded to the power vertical ground wire.)
 - (2) A fire hydrant, a projection on a man-hole cover, or a metallic curb box.

(3) A 5-inch screwdriver blade pushed into the earth about 5 feet from the pole.

(4) A substantial metal object such as a piece of lead sleeving, a metal crossarm brace, or a half-pound bar of D Seam Solder, etc, laid on the ground or pavement about 5 feet from the pole.

(b) Standing about 3 feet from the pole, grasp the insulated probe in one hand and the indicator assembly in the other. Push the toothed metal disk at the end of the probe firmly against the ground wire or metal conduit being tested, and promptly look into the open end of the indicator assembly.

(c) **IF THE INDICATOR GLOWS, THE GROUND WIRE OR METAL CONDUIT IS ENERGIZED.** Immediately remove the probe from contact with the ground wire or metal conduit and notify your supervisor. **DO NOT CLIMB OR CONTACT THE POLE IF THE INDICATOR GLOWS.**

(d) If the ground wire is broken, test the UPPER part as described above, unless the break occurs above the telephone space. Do *not* attempt to test a broken ground wire if the break is observed to be in the power space. Report the broken power wire to your supervisor.

(e) If the lower 8 feet or so of the ground wire is protected with wood molding, test above the molding.

4.02 If the voltage tester DOES NOT GLOW in making the test described in Paragraph 4.01, poles carrying vertical power ground wires and telephone cable may be climbed in accordance with safe climbing practice. Care should be exercised to avoid simultaneous contact between power ground wires and telephone cable or guys as a small voltage (60 volts or less) may be present. This is recommended to avoid the possibility of surprise shock which might (under some circumstances) cause a fall from the pole.

4.03 After making the voltage test on a pole carrying vertical metallic power conduit and telephone cable, put on insulating gloves and place a B temporary bond as follows. **FIRST ATTACH THE SMALL CLIP TO THE TELEPHONE STRAND:** then attach the large clip to the conduit (or a conduit fastening if the conduit is too large). **LEAVE THE BOND IN PLACE,**

UNTIL ALL WORK OPERATIONS AT THIS POLE HAVE BEEN COMPLETED FOR THE DAY. If the bond starts to smoke, put on insulating gloves and descend the pole. Avoid contact with the bond or the conduit and notify your supervisor.

4.04 On completion of work operations on the pole, remove the bond as follows:

- (a) Put on insulating gloves.
- (b) Remove the clip from the conduit. Remove this clip **FIRST**.
- (c) Remove the other clip from the strand.
- (d) If a spark is observed in removing the bond, notify your supervisor.

4.05 If a shock is experienced as a result of simultaneous contact between the ground wire or conduit and grounded objects such as telephone cable, strand, guy, etc, descend the pole at once and report the matter to your supervisor immediately.

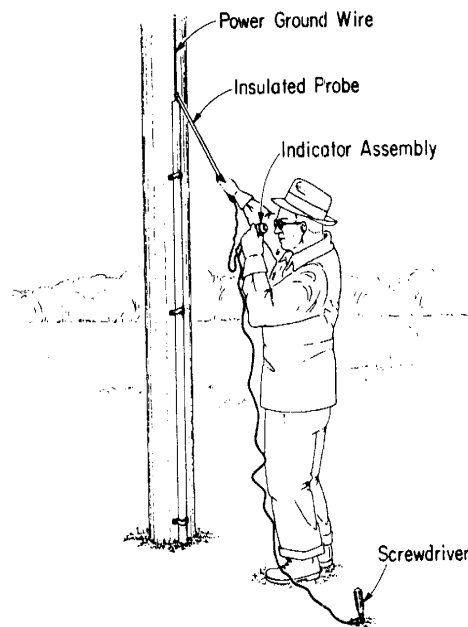


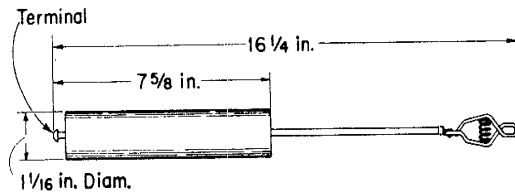
Fig. 3

5. VOLTAGE TESTS AND SAFEGUARDS — POLES WITH STREET LIGHT FIXTURES

5.01 The B shunting capacitor is required under certain conditions in testing street light fixtures. In general, areas where it will be re-

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quired will be known and workmen will be so equipped.

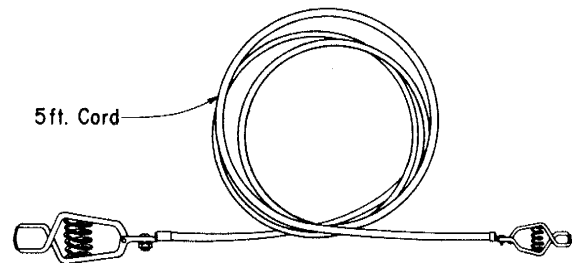


B SHUNTING CAPACITOR

Fig. 4

5.02 Where a voltage test is required under conditions of Paragraph 3.04, proceed to test and safeguard the street light fixture as follows:

- (a) Attach B Voltage Tester bag containing test equipment to body belt.
- (b) Put on insulating gloves and climb to a convenient height to make the test. **AVOID CONTACTING THE LIGHT FIXTURE OR ITS WIRING.**
- (c) Attach the insulated clip of the voltage tester to the cable suspension strand, support bracket of multiple line wire or a bare vertical power ground wire. Push the toothed metal disk firmly against the street light fixture and promptly look into the open end of the indicator assembly.
- (d) If the indicator glows, immediately remove the probe from contact with the fixture, then remove the insulated clip from its attachment. If a B shunting capacitor is not available, descend the pole and notify your supervisor. **AVOID CONTACT WITH FIXTURE OR ITS WIRING.** If a B shunting capacitor is available, make a second test as described in subparagraphs (h), (i), and (j) following.
- (e) If the indicator does NOT glow, contact the fixture with the probe again to be sure that good contact has been made. If the indicator still does not glow, place a temporary bond as described in (f) below.
- (f) Attach the small clip of the B temporary bond to the cable suspension strand or the bare power vertical ground wire so as not to be in way of work operations. **DO THIS FIRST.** Then attach the other clip of the bond wire to the street light fixture. **DO NOT BOND** to the support bracket of multiple line wire or the suspension strand of **ISOLATED** cable.



B TEMPORARY BOND

Fig. 5

DO NOT ATTACH TO THE STREET LIGHT WIRES OR TERMINALS TO WHICH THEY ARE ATTACHED. NEVER ATTACH THE CLIP TO A FIXTURE WHICH CAUSES THE INDICATOR TO GLOW.

- (g) The insulating gloves may be removed **ONLY AFTER** the temporary bond is in place, and then only if other protection requirements permit. **LEAVE THE B TEMPORARY BOND IN PLACE UNTIL ALL WORK OPERATIONS HAVE BEEN COMPLETED AT THIS POLE FOR THE DAY.** If the bond starts smoking, put on insulating gloves and descend the pole immediately. Avoid contact with the bond, the fixture or its wiring. Notify your supervisor.
- (h) If a B shunting capacitor is available, under the circumstances described in Subparagraph (d) preceding, make a second test as follows:
 - (1) Attach the clip of the voltage tester and the clip of the shunting capacitor to the cable suspension strand or to the bare power vertical ground wire.
 - (2) Attach the small clip of the temporary bond to the metal terminal of the capacitor and the other clip to the metal cap behind the disk of the insulated probe.
 - (3) **MAKE ATTACHMENTS IN (1) AND (2) ABOVE SO THAT AT LEAST 1-FOOT SEPARATION IS MAINTAINED BETWEEN THE LEADS OF THE VOLTAGE TESTER AND THE TEMPORARY BOND OR SHUNTING CAPACITOR.**
 - (4) Touch the toothed metal disk to the street light fixture and promptly look into the open end of the indicator assembly. (See sketch.) **AVOID BODY CONTACT WITH TEMPORARY BOND OR CAPACITOR DURING TEST.**

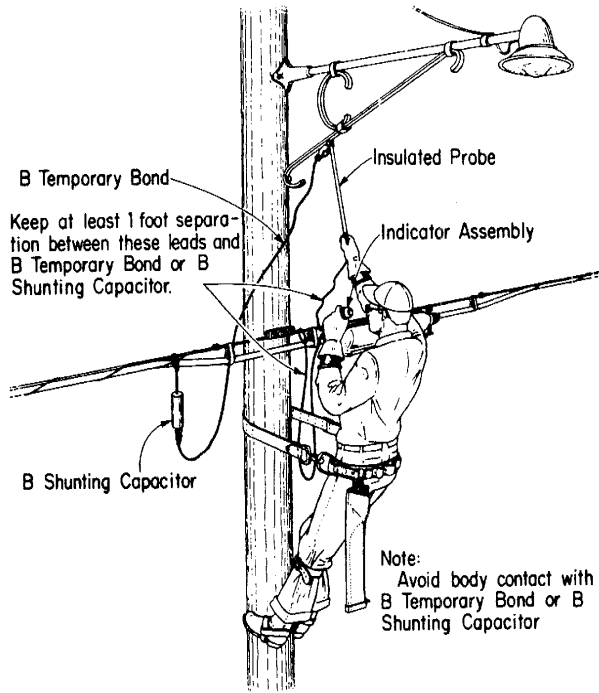


Fig. 6

- (i) **IF THE INDICATOR GLOWS, THE FIXTURE IS ENERGIZED.** Immediately remove the probe from contact with the fixture, replace testing equipment in the carrying case, descend the pole and notify your supervisor. **AVOID CONTACT WITH THE FIXTURE OR ITS WIRING.**
- (j) If the indicator does not glow, contact the fixture with the probe again to be sure that good contact has been made. If the indicator still does not glow, place a temporary bond as described in Subparagraphs (f) and (g) preceding.
- 5.03** On completion of work operations on a pole, remove the B temporary bond as follows:
- Put on insulating gloves.
 - Remove the clip attached to street light fixture. **REMOVE THIS CLIP FIRST.**
 - Remove the other clip from its attachment. If a spark is noticed on removing the bond, descend the pole immediately and notify your supervisor.

6. TESTING THE B VOLTAGE TESTER

6.01 The B Voltage Tester should be tested weekly to ensure that it is operating satisfactorily. The dates on which it is tested shall be recorded on the test date card provided for the purpose. The test date card will be found in the external plastic pocket of the B Voltage Tester bag.

6.02 The method of testing the B Voltage Tester is as follows:

- Locate a standard 110- to 120-volt convenience outlet which is energized. This may be checked with an extension cord and lamp.
- Insert the voltage plug, described in Paragraph 2.03, into the outlet; first choose the smaller of the two slots in the outlet to insert the prong connected to the resistor.
- Attach the insulated clip of the voltage tester to a ground such as a water pipe, radiator, metallic power conduit, etc. If none of these is available, lay the B temporary bond, uncoiled, on the floor and attach to one of its clips.
- Grasp the grip of the voltage tester in the palm of the hand so the end of the grip extends almost to the forefinger with the wire passing between the thumb and forefinger. (See sketch.) With the thumb and forefinger bent, pinch the wire firmly. Hold the grip as firmly as possible with three fingers, and while keeping the wire firmly pinched, straighten the thumb and forefinger—thus putting tension on the wire. **DO NOT USE BOTH HANDS AND PULL OR JERK ON THE WIRE SINCE EVEN A NORMAL CORD MAY BE DAMAGED OR BROKEN IF IT IS SUBJECTED TO VIOLENT PULLING.**
- Touch the toothed metal disk of the probe to the metal spiral of the voltage plug. The indicator should glow faintly. If the indicator does not glow, release the tension in the wire, but keep the probe in contact with the voltage plug. If the indicator glows after the tension has been released, the wire is broken under the insulation and the tester should be disposed of in accordance with the Company's established routine.

(f) If the indicator does not glow, reverse the voltage plug in the outlet by removing it, turning a half-turn and inserting again into the outlet, and repeat the test.

(g) If the indicator still does not glow, and it is known that the convenience outlet is not defective, then the voltage tester must be defective and shall be disposed of in accordance with the Company's established routine.

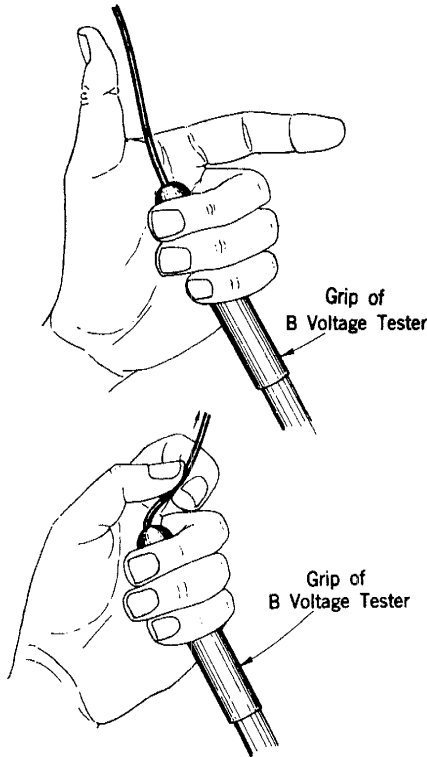
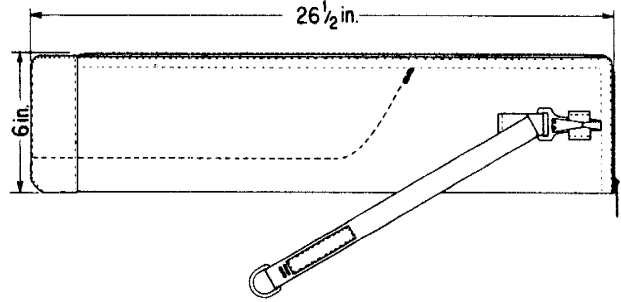


Fig. 7

7. CARE AND STORAGE

7.01 A canvas bag has been provided to carry and store the B Voltage Tester, B temporary bond, B shunting capacitor and test date

card when not in use. A web strap with dee ring and snap hook is provided to attach the bag to the body belt. In placing the tester in the bag, place the toothed metal disk first. The capacitor and bond should be carried in lower pocket of bag. The test date card is carried in the plastic pocket provided for the purpose.



B VOLTAGE TESTER BAG

Fig. 8

7.02 The B Voltage Tester should be handled and stored with reasonable care. Remove any dampness or dirt with a clean cloth before using or storing. Keep the instrument free of grease or oil to prevent deterioration of insulation.

7.03 Avoid exposing the instrument to excessive heat such as may be encountered near radiators, etc, as the plastic rod may deform under these temperatures.

7.04 The instrument should be CARRIED DOWN OR LOWERED from poles, NOT DROPPED, as the impact may short-circuit the elements in the neon glow unit of the indicator.

7.05 Certain minor field repairs to the B Voltage Tester are described in Section 620-105-300.